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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,876	09/25/2003	John Chen	15436.247.4.1	5788

22913 7590 07/05/2006

WORKMAN NYDEGGER
(F/K/A WORKMAN NYDEGGER & SEELEY)
60 EAST SOUTH TEMPLE
1000 EAGLE GATE TOWER
SALT LAKE CITY, UT 84111

EXAMINER

MENEFEE, JAMES A

ART UNIT	PAPER NUMBER
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2828

DATE MAILED: 07/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/670,876

Applicant(s)

CHEN ET AL.

Examiner

James A. Menefee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 20-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19, 25 and 26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of group I, claims 1-19 and 25-26, in the reply filed on 4/24/2006 is acknowledged. Claims 20-24 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Response to Arguments

The examiner does not necessarily agree with applicant's arguments filed 1/11/2006, but in any event the prior rejections are withdrawn and new rejections are presented below.

Drawings

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 7-10, and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,835,783 to Suyama et al. ("Suyama"). See Fig. 5 and the discussion thereof.

Regarding claim 1, Suyama discloses an opto-electronic device having a first cladding 10 separated from a second cladding 3 by an active layer 4, the device comprising a ridge waveguide 15 formed from at least a portion of the first cladding layer, said ridge waveguide having a ridge top surface disposed from the active layer by a first distance, and at least one semiconductor mesa (at the sides of the device) fashioned from a protective layer 12 separate from the first cladding and having a mesa top surface disposed from the active layer by a second distance greater than the first distance so that the mesa shields the ridge from mechanical damage.

Regarding claim 2, the ridge waveguide is disposed between first and second channels 14.

Regarding claim 3, metal contact 17 is disposed on the ridge waveguide.

Regarding claim 4, the ridge waveguide in combination with the metal contact has a distance from the active layer less than the second distance.

Regarding claim 7, the device is a Fabry-Perot laser.

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Regarding claim 8, the limitations are disclosed as in the rejection of claim 1, and further the device is a laser, and there are a plurality of mesas, one on either side of the device.

Regarding claims 9-10, see the rejection of claims 3-4 above.

Regarding claim 26, there is contact layer 11 that extends over the ridge, then terminates short of the mesas so that a boundary is defined. It is true that the contact layer resumes over the mesa, but the wording of the claim does not prevent this.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-6, 11-19, and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suyama.

Regarding claim 5, Suyama discloses the limitations of claim 1 as shown above, but does not disclose InP as the material of the mesa. Suyama uses a GaAs based laser, but InP based devices are almost as prevalent. It would have been obvious to one skilled in the art to use an InP laser, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 277 F.2d 197, 125 USPQ 416 (CCPA 1960). The material used affects the output of the laser, thus one skilled in the art would use InP based devices if a different wavelength were required by the particular application.

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Regarding claim 6, there is not disclosed an etch stop layer between the cladding and protective layer. However, Suyama clearly shows the layer 12 and the layer 10 are etched differently; all of 12 is removed in the center of the device, while 10 is not. Etch stop layers are known and it would have been obvious to one skilled in the art to use one in this location because they can more precisely control the extent of etching, as is known. Without such a layer, etching will be controlled by the different etch rates of different materials, and this is not as easily controllable as an etch stop layer.

Regarding claims 11-13 and 17, the particular thicknesses of various layers are not disclosed; Suyama is silent as to these features. It would have been obvious to one skilled in the art to use these thicknesses, however, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980); MPEP 2144.05 II.A. The thickness of the contact is result effective in that the thickness has a direct bearing on the type of electrical contact that is made to the device; contact thickness will affect properties such as resistance, parasitic capacitance, etc. The distance difference, i.e. the mesa thickness, is discussed in Suyama as a result effective variable. See col. 3 lines 27-31.

Regarding claim 14, Suyama discloses in Fig. 5 a laser die having an active layer 4 disposed between first and second cladding layers 10,3, a contact layer 11 disposed on the first cladding layer 10, a ridge waveguide contacting said contact layer and a metal contact layer 17 formed on said contact layer, said ridge waveguide disposed from a first surface of the laser by a first height, and at least one semiconductor mesa 12 formed on said contact layer 11 and extending a distance above a top surface of said metal contact to form an elevated surface

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shielding said ridge from mechanical damage. It is not disclosed that the contact layer 11 is highly doped. However, this is typical and well known in the art for such cap layers, and it would have been obvious to one skilled in the art to do so because this facilitates a high quality and low resistance contact between the electrode and the ridge, as is known.

Regarding claim 15, see the rejection of claim 2 above.

Regarding claim 16, Suyama discloses the cladding layers are AlGaAs, III-V material.

Regarding claim 18, Suyama discloses the upper surface of the waveguide 10 contacts the contact layer 11.

Regarding claim 19, the contact layer 11 is apparently formed over the entire wafer, therefore wherever the wafer is diced to form the particular laser die the contact layer will terminate proximal to that edge.

Regarding claim 25, insulating layer 16 extends over each of the mesas and at least partially over the ridge.

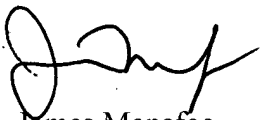
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Menefee whose telephone number is (571) 272-1944. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



James Menefee
June 22, 2006

**JAMES MENEFEE
PRIMARY EXAMINER**